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EXAMINER

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 10/17/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,773

Applicant(s)

HARA ET AL.

Examiner

Gregory E. Webb

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7-11-03
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-7,10,18,19,23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7,10,18,19,23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Newly submitted claims 25-31 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the applicant have now excluded compounds originally permissible in the claimed composition. Furthermore, the applicant's independent claims are now mutually exclusive as they exclude compounds required by other claims.

Election/Restrictions

2. This application contains claims directed to the following patentably distinct species of the claimed invention: Species A) composition containing only hydrogen peroxide, a quat, and water (see claim 1); Species B) a composition containing only hydrogen peroxide, a quat, water, and an amine (see claim 25); Species C) a composition containing only hydrogen peroxide, a quat, water, and a water soluble organic solvent (see claim 26); Species D) a composition containing only hydrogen peroxide, a quat, water, an amine, and a water soluble solvent (see claim 29).

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

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Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

4. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 25-31 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
9. Claims 1, 2, 3, 6, 7, 10, 18, 19, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashida et al (US 5,580,846).
10. Hayashida teaches the following:

" As another cleaning method similar to the SC-1 treatment, there is known a method using an organic alkali and hydrogen peroxide. For example, there are disclosed tetramethylammonium hydroxide (TMAH) and hydrogen peroxide (Japanese Patent Unexamined Publication No. 50-147284), trialkyl(hydroxyalkyl)ammonium hydroxide and hydrogen peroxide (Japanese Patent Examined Publication No. 53-43012, U.S. Pat. No. 4,239,661, U.S. Pat. No. 4,339,340), etc. These methods are excellent in fine particulates removing ability which is characteristic of treatment with alkali and hydrogen peroxide, like the SC-1 treatment. But the methods cause serious adsorption of Fe, Al, etc. from the treating solution and hence are not sufficient in cleaning ability for wafers contaminated with Fe, Al, etc. A method of catching metallic impurities as stable water-soluble complex to make them inactive to a material to be cleaned is a conventional method for formulating usual cleaning agents. For example, addition of a complexing agent to TMAH and hydrogen peroxide is disclosed in Japanese Patent Unexamined Publication No. 50-158281, and addition of a complexing agent to trialkyl(hydroxylamine)ammonium hydroxide and hydrogen peroxide is disclosed in Japanese Patent Examined Publication No. 53-20377, U.S. Pat. No. 4,239,661 and U.S. Pat. No. 4,339,340. In each case, the added amount of the complexing agent should be 0.01% by weight or more.

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Addition of a cyano compound is dangerous. When an organic compound such as ethylenediamine tetraacetic acid (EDTA), triethanolamine, etc. is added in an amount of as much as 100 ppm as described in them, harmful carbon contamination takes place on silicon surface to cause problems in electrical properties. " (see col. 2)

11. It should be noted that the combination of the hydrogen peroxide and the tetramethylammonium hydroxide would inherently form the applicant's claimed peroxyhydrate of the tetramethylammonium hydroxide.

12. Claims 1, 10, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al (US 5,580,846) as relied upon above.

13. Concerning claim 24, although the prior art fails to teach the applicant's claimed tetraethylammonium hydroxide, the prior art does teach the use of a functionally equivalent compound namely the tetramethylammonium hydroxide. Furthermore, as these compound differ only in methyl and ethyl group and as it is well known that variations in alkyl groups by a single carbon atom do not affect functional properties significantly such modifications would be considered an obvious variation of those compositions taught in the prior art. Please note the following support from section 2144.09 of the MPEP.

2144.09 Close Structural Similarity Between Chemical Compounds (Homologs, Analogues, Isomers) [R - 3]

REJECTION BASED ON CLOSE STRUCTURAL SIMILARITY IS FOUNDED ON THE EXPECTATION THAT COMPOUNDS SIMILAR IN STRUCTURE WILL HAVE SIMILAR PROPERTIES

A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne , 606 F.2d 303, 203 USPQ 245, 254 (CCPA 1979). See In re Papesch , 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (discussed in more detail below) and In re Dillon , 919 F.2d 688, 16

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USPQ2d 1897 (Fed. Cir. 1991) (discussed below and in MPEP § 2144) for an extensive review of the case law pertaining to obviousness based on close structural similarity of chemical compounds. >See also MPEP § 2144.08, paragraph II.A.4.(c).<

14. It is thus the burden of the applicant to demonstrate via physical evidence that these two compounds are not functionally equivalent.

15. Claims 1, 2, 3, 6, 7, 10, 18, 19, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Hunt et al (US 6,428,387).

16. Hunt teaches a composition to be added to a slurry containing only TMAH and hydrogen peroxide (see col. 3, lines 11-19).

17. Claims 1, 10, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al (US 6,428,387) as relied upon above.

18. Concerning claim 24, although the prior art fails to teach the applicant's claimed tetraethylammonium hydroxide, the prior art does teach the use of a functionally equivalent compound namely the tetramethylammonium hydroxide. Furthermore, as these compound differ only in methyl and ethyl group and as it is well known that variations in alkyl groups by a single carbon atom do not affect functional properties significantly such modifications would be considered an obvious variation of those compositions taught in the prior art.

19. Claims 1, 2, 3, 6, 7, 10, 18, 19, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Jolley (US 5,489,557).

20. Jolley teaches a composition containing an oxidation agent and a base. Jolley teaches the oxidation agent to be hydrogen peroxide and the base to be tetramethyl ammonium hydroxide (see col. 2, lines 29-58).

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21. Claims 1, 10, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jolley (US 5,489,557) as relied upon above.

22. Concerning claim 24, although the prior art fails to teach the applicant's claimed tetraethylammonium hydroxide, the prior art does teach the use of a functionally equivalent compound namely the tetramethylammonium hydroxide. Furthermore, as these compound differ only in methyl and ethyl group and as it is well known that variations in alkyl groups by a single carbon atom do not affect functional properties significantly such modifications would be considered an obvious variation of those compositions taught in the prior art.

23. Claims 1-7, 10, 18, 19, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoyama et al (US 5,393,386).

24. Aoyama teaches a method of preparing high purity aqueous quaternary compounds. Aoyama forms these compositions by combining hydrogen peroxide with the quaternary compound and platinum (see list of starting quaternary compounds col. 3, lines 10-35; noting that the platinum is not actually in solution but is instead a solid material separate from the solution and acting only as a catalyst; see col. 3, lines 11-37 and abstract).

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 703-305-4945. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 703-308-4708. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

A handwritten signature in black ink, appearing to be 'Gregory E. Webb', with a stylized, flowing script.

Gregory E. Webb
Primary Examiner
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gw